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Editorial Comment

The New Year

As *Diseases of the Chest* enters its eighth year of publication, it is fitting for us to reiterate the premises upon which this journal was established and has so ably functioned during the past seven years.

The success of the journal is the outgrowth of an idea, conceived for the purpose of bringing to the busy physician a compact, practical publication dealing with the important specialty of chest diseases. For the successful manner in which this idea has been carried out, credit in large measure is due to its former editors. To Dr. Chas. M. Hendricks, the first editor of *Diseases of the Chest*, we are indebted for the important task of pioneering the publication. In the year 1937, this new thought in medical literature was adopted by the American College of Chest Physicians and Dr. Frank Walton Burge ably carried forward the work of editing the journal.

We propose to continue the splendid work which our predecessors have engineered so well. We also propose to keep abreast of

current demands for a wider coverage of subject matter concerned with the specialty of chest diseases. We propose to conform to the highest standards of scientific endeavor in the presentation of papers in *Diseases of the Chest*.

The idea of a practical journal dealing with a specialty in medicine has been popularized. We can point to similar journals now being published for the specialties of Neurology and Psychiatry; and Ophthalmology and Otolaryngology. These journals have been organized since the publication of *Diseases of the Chest* and they are patterned after our own journal. We are proud of the part which we have played in pioneering this idea.

To our contributors, subscribers, advertisers, and other loyal friends, we say: "thank you." It has been your cooperation and faithful support which has made and is making *Diseases of the Chest* possible. The Editorial Board of *Diseases of the Chest* is grateful to you. To each and all of you, our best wishes for a

HAPPY NEW YEAR.

R. C. M.

A New Year's Report

BENJAMIN GOLDBERG, M.D., *President*
American College of Chest Physicians



At the birth of this New Year, we who practice the art and science of medicine should be imbued with the importance and necessity of a greater service.

On this New Year's Day we find the Nations of the World engaged in an all-out production effort impelled by the inexorable thought that they must travel the road to destruction through destruction. Warriors and armament stand in the forefront of the parade ground of our civilization. And yet the intelligence of the leadership of the peoples of the world dictates that this should and must be.

Time and events have proven that the President of these United States has been correct in his foreign policies and in the vast program of military preparedness which he has compelled.

We who have chosen to serve humankind can well realize that as physicians an added task has been placed with the already heavy burdens to be carried by our profession. Our thoughts are no longer only focused on the daily task of preventing illness and healing the sick in our communities but on the problems that confront us in war.

This organization, the American College of Chest Physicians, has its interest centered on diseases which have always shown an increase in time of war.

We are going to do what we can to prevent and correct this condition. Today, our organization consists of over eleven hundred members who have chosen and been chosen because of their personal interest and their own achievement to serve in their special field of endeavor.

Heretofore our aim has been largely educational, or distributing new research and methods to the specialist; and more important, stimulating basic education in diseases of the chest to medical students and general practitioners. Now, also, we as an organization and as individuals must prepare to aid the armed forces of our government in the selection and care of the vastly increased numbers to be added to these forces.

Four months ago the Committee on Medical Preparedness of the American Medical Association and the Army gave our organization the task of determining the qualifications for service of these medical men in this country who stated on their questionnaires that they were tuberculosis specialists. This work has been completed and "well done." Other important problems to aid in the present emergency are continuing but cannot be discussed at this time.

The past two annual meetings of our College have set records in attendance and in the class of material presented. Our next meeting is at Atlantic City, with the Hotel Dennis as the headquarters hotel. A meeting of the officers of the College was held in Chicago in November and the details of the next program discussed. Outstanding names and contributions will be found in the program in the preliminary statements to be published later. An important innovation will be a joint session with the American Broncho-Esophagological Association.

Chapter organization continues. I had the pleasure of being present recently on the occasion of the formation of the California Chapter. Much enthusiasm was evident at this meeting. The present chapters are: Illinois, New York State, New Jersey, Cuba, Missouri, Texas, Pennsylvania, Ohio, Indiana, Southwestern, Pacific Northwest, and California Chapters.

In extending to you the greetings for this New Year, let us all think of

A complete service to our country
and

The continuance of the position we have achieved in scientific leadership and attainment in our special field of medicine.

The Treatment of Multiple Abscesses of the Lung With Sulfanilamide

A Report of Two Cured Cases*

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An abscess of the lung may be regarded as a type of suppuration which is not caused by a specific organism, and therefore should not be considered a specific disease. Unlike tuberculosis, organisms of all descriptions are found in the sputum of an abscessed lung concomitant with the varied pathologic processes participating in the formation of an abscess. As a matter of fact, even today, one of the chief bacteriological problems in the etiology of a given case is whether any particular organism or set of organisms is of more importance than the other existing organisms found in the bacterial flora of an abscess. The question of the symbiotic relationship between certain bacteria in the formation of an abscess has occupied the minds of many, but to date has not been answered satisfactorily. Formerly it was thought that the aerobic pyogenic bacteria dominated the pathologic picture of lung abscesses. Of recent years, various anaerobic organisms that are normally found in the mouth have assumed places of importance. For instance; Kline and Berger,¹ Smith,² and others have isolated such anaerobic organisms in 90 per cent of their lung abscesses.

To understand more fully the diagnostic problems involved and to treat this disease more successfully, we must recognize the various predisposing etiologic, bacteriologic and pathologic factors at play in the production of lung abscesses.

In the light of the foregoing information, it becomes obvious that the mere detection of the existence of an abscess or abscesses neither completes the diagnosis nor specifically aids in the treatment of the patient. It further becomes evident that for the double purpose of obtaining an accurate etiologic diagnosis and of applying proper treatment for the abscesses, it is important to determine first, the possible predisposing factors; sec-

ond, the character of the predominating organisms; third, the location of the abscesses; fourth, whether the abscesses are unilateral or bilateral, unilobar or multilobar; fifth, the duration of the disease; sixth, the presence or absence of complications; and seventh, the general condition of the patient at the time the diagnosis is made.

While it is now generally accepted that most acute solitary abscesses will either heal with bed rest and symptomatic treatment alone, or when assisted by surgical measures, experience has shown that the outlook for multiple abscesses is not so favorable since in most instances any form of treatment defeats the efforts of internist and surgeon alike. Autopsy material reveals that many deaths are the result of the multiplicity of the abscesses located in one lobe, one lung or both lungs. For instance, in a recent analysis of the causes of death in one hundred consecutive fatal cases by James Davidson³ and co-workers, the following was found:

Mortality According to Extent of Lung Involvement

	No.	Mortality	Percent
Simple abscesses	158	45	28.5
Multiple abscesses in single lobe	28	16	57
Abscesses in multiple lobes of one lung	22	10	45.8
Bilateral abscesses	31	29	93.5

In a previous report on the treatment of lung abscesses, the writer⁴ has reported seven cases of multiple abscesses with a mortality of 100 per cent.

In the light of existing high mortality figures, and in the absence of any reported cured cases of multiple abscesses with sulfanilamide, it occurred to the writer that a report of two cases, one bilateral and multilobar and the other unilobar, treated with sulfanilamide with complete recovery would be of interest to the readers of the journal:

* From the Department of Internal Medicine, Chest Division, St. Louis University School of Medicine.

Report of Cases

Case 1. H. F.—White, Female, age 27, referred by Dr. S. H. Maizus was admitted to St. Anthony's Hospital on October 28, 1939, with the following complaints:

Cough and expectoration of slightly foul sputum for the past 3 weeks. Afternoon temperature for 3 weeks. Shortness of breath. Weakness and tired feeling for 3 months but worse the last 3 weeks.

Past History—Asthma since the age of 20. Carbuncle left forearm 5 weeks prior to date of admission to hospital. This carbuncle was opened and healed before the onset of the pulmonary symptoms.

Physical examination by the writer on October 30, 1939, revealed the major pathology in the left lung region with a localization of the rather meager signs below the fourth vertebral spine mainly in the form of dullness and diminution of breath sounds. A few fine rales were heard in the first and second interspace on the left side anteriorly and at extreme base posteriorly. The right lung showed practically no abnormal changes. A flat and lateral x-ray film (figures 1 and 2)

revealed a large abscess in the upper third of the left lung close to the axillary region, immediately below and posteriorly placed, a smaller one best seen in the lateral view, and in addition two smaller ones in the lower half of same lung. The right lung revealed two areas of pneumonitis, one opposite the eighth rib posteriorly and the other opposite the tenth rib posteriorly. A smaller abscess with a fluid level was seen between the tenth and eleventh rib and near the cardiac border on the same side. A close study of the different films revealed seven distinct separate local areas of pneumonitis and three of these were distinct abscesses with fluid levels.

Laboratory Tests—Sputum studies failed to reveal tubercle bacilli. Culture studies of sputum repeatedly revealed the predominating organism to be haemolytic streptococci in large numbers. Blood cultures were negative. Urine was negative. Examination of blood revealed the following:

Haemoglobin, 64 per cent, color index 9, R. C. 3,490,000, W. C. 19,200. Schilling count revealed:

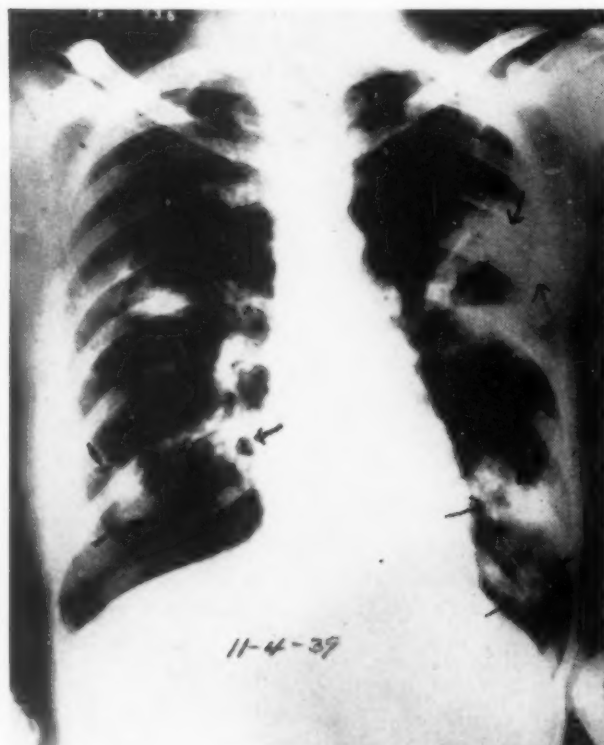


FIGURE 1 (Case 1, Nov. 4, 1939)

Shows multiple abscesses of both lungs. Arrows point to six abscesses with and without fluid levels.



FIGURE 2 (Case 1, Nov. 4, 1939)

Shows lateral view—two abscesses seen in this view—one not seen in figure one. Arrows point to abscesses.

B	E	J	Stab	Seg	Lym	M
0	1	0	16	70	7	6

Kahn test was negative. There were no anaerobic organisms found in the sputum.

Temperature fluctuated from 99² in A. M. to 103 in P. M.; pulse from 90 to 120 and respiration from 20 to 34.

Treatment—On November 4, 1939, patient was given sulfanilamide as follows: Fifteen grains every four hours during day and night and sodium bicarbonate, forty grains during each twenty-four hours. This management continued, with the exception of one day when none was given, until the fever became normal after which time one dose was dropped daily so that by November 16th, sulfanilamide was discontinued. A total of sixty-three grams was administered. The temperature started to drop on November 6th and by November 12, 1939, temperature was normal. One blood transfusion of 250 cc. was also given on November 9th, but since patient had a severe reaction no more transfusions were attempted. A flat film (figure 3) taken on November 28th, showed considerable healing of the abscesses. The only ill effects of the drug were slight nausea, slight headache,

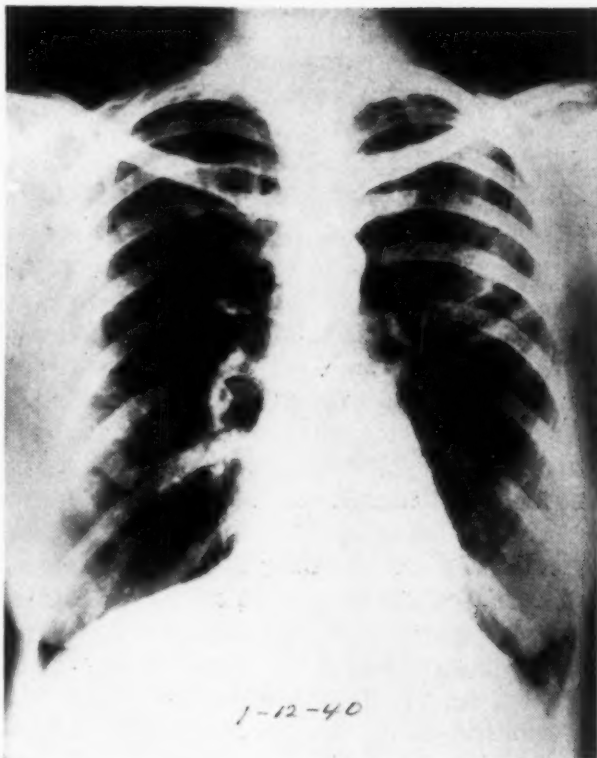


FIGURE 4 (Case 1, Jan. 2, 1940)
Shows complete healing of all abscesses. Some fibrosis seen in the region of the third rib and third interspace has replaced the large abscess.

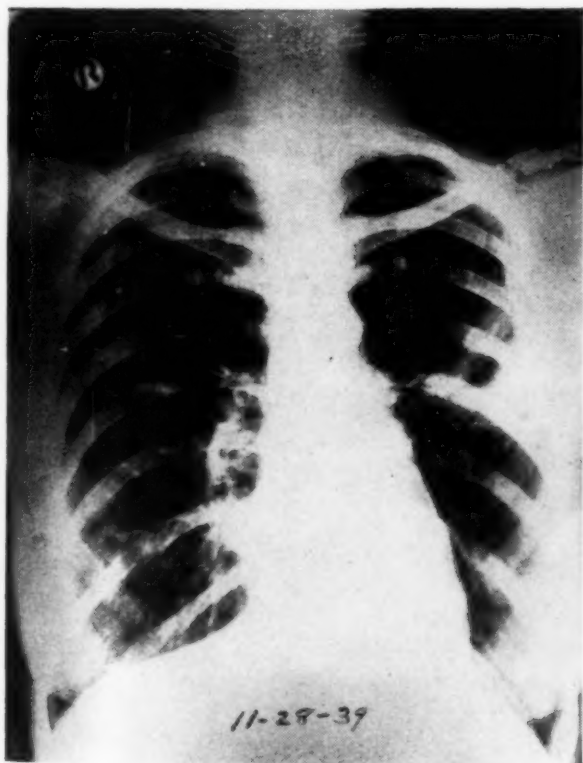


FIGURE 3 (Case 1, Nov. 28, 1939)
Shows considerable healing of abscesses. Remains of large abscess, however, are still seen.

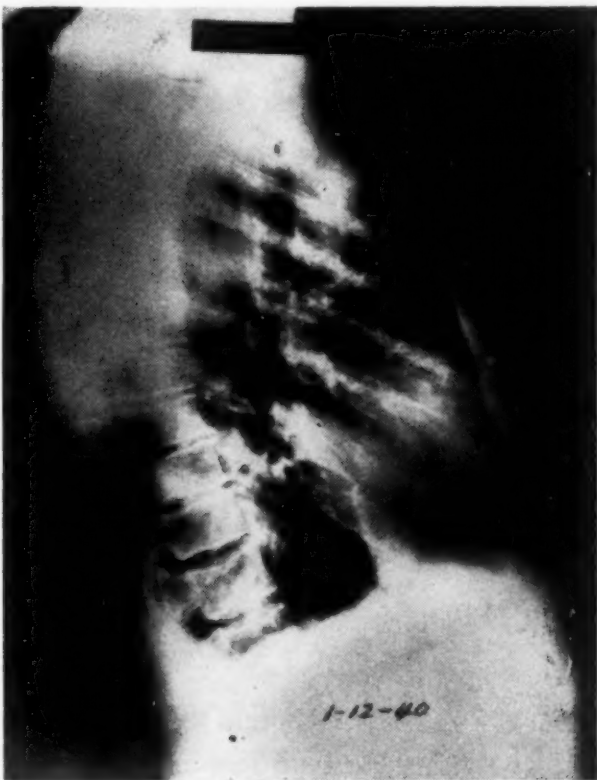


FIGURE 5 (Case 1, Jan. 12, 1940)
Lateral view shows complete healing of abscesses.

moderate cyanosis, and toward the end of treatment a moderate diarrhoea.

Additional laboratory tests during the course of treatment were as follows: The blood on November 9th, before transfusion was given as follows: Haemoglobin —69 per cent, R. C. 2,720,000, color index 1+, W. C. 20,500, Schilling:

B	E	J	Stab	Seg	Lym	M
0	0	4	38	46	6	5

Blood concentration tests for sulfanilamide revealed as follows: 11/7/39, 15.7 mgms. per 100 cc; 11/10, 19 mgms.; 11/15, 16 mgms.

Patient was discharged from hospital on November 29, 1939, to continue bed rest for another month at home. An examination of patient on January 12, 1940, in the office revealed complete healing of the abscesses as indicated by history, physical examination, fluoroscopy and flat and lateral roentgenograms (figures 4 and 5). A recent follow-up revealed that patient has remained well.

Case II.—A. R. White—Male, Accountant, age 35. Admitted to Desloge Hospital August 27, 1940, with the following complaints: Cough with foul expectoration, fever, shortness of breath, dizzy spells and nausea.

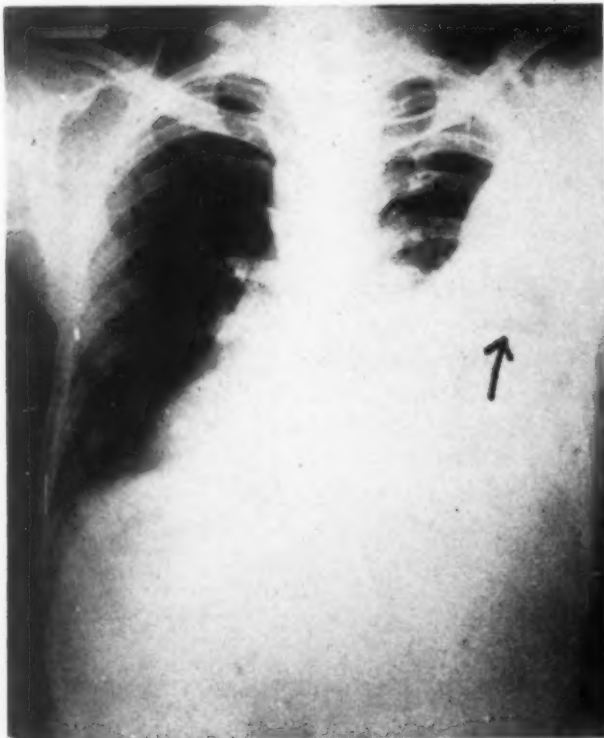


FIGURE 1 (Case 2, Aug. 28, 1940)
Shows abscess with fluid level in midportion of right lung—and a smaller abscess above not well seen because it is filled with pus. Arrow points to fluid level.

Past History—Patient stated that for the past four weeks he was treated for nervousness with injections of insulin. Following the last insulin injection, which was about 14 days prior to admittance to hospital, he began to vomit and aspirated some vomitus into the lung. On admittance to the hospital temperature was 101°, pulse 110, respiration 36, white count 19,400, red count 3,960,000, haemoglobin 13.4 gms. Schilling revealed a marked shift to left of the younger polymorphs as follows:

B	E	J	Stab	Seg	Lym	M
2	1	0	14	64	18	1

Kahn test was negative. Sputum negative for tuberculosis. Sputum typing was negative for pneumococci. Sputum cultures revealed almost a pure culture of alpha hemolytic streptococci.

Physical examination revealed—*Right Lung*—dullness on percussion apex to base front and back—and diminution of breath sounds. *Left Lung*—negative. A flat roentgenogram of the chest (figures 1 and 2) revealed a cavity with a fluid level in the midportion of right lung and another cavity above this one filled with pus and therefore not seen distinctly, however visible at different times under the fluoroscope. Patient was put on

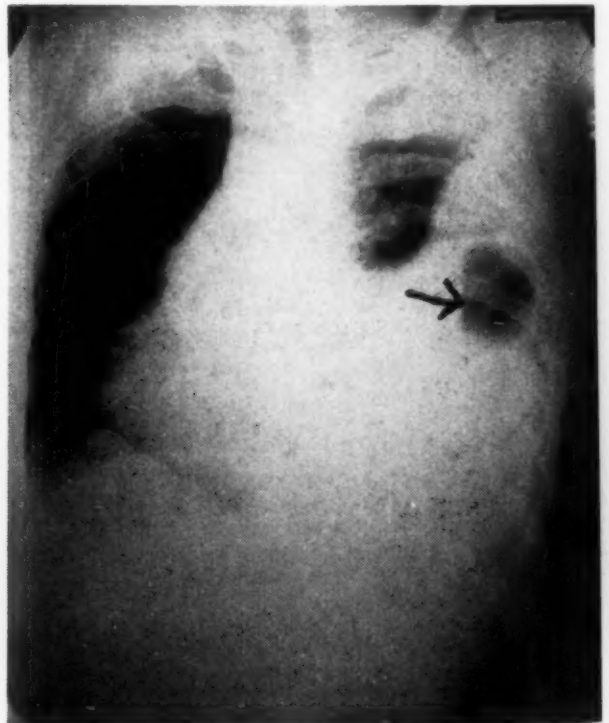


FIGURE 2 (Case 2, Aug. 29, 1940)
Shows abscess with right side up and fluid level shifted. Arrow points to fluid level.

sulfanilamide grains, fifteen every four hours day and night, until a total of sixty-three grams were given. Blood concentration of sulfanilamide on September 3, 1940, was 6.5 mg. per cent and on September 5—11.7 mgs. per cent. While patient was on this treatment, he developed a sudden pain in the chest accompanied by dyspnea and rise in temperature. A flat x-ray (figure 3) revealed a rupture of the upper and lower abscesses into the pleural cavity—producing a pyopneumothorax. The sulfanilamide was nevertheless continued until temperature dropped to normal. The temperature dropped on September 6, 1940, and remained normal. The sulfanilamide, however, was continued in reduced doses until day of discharge from hospital. Figure 4, taken on October 31, 1940, shows complete healing of abscesses. Patient has been working steadily since that time with no complaints.

Conclusion

It is of interest to point out that in both instances the predominating etiologic organisms was a haemolytic streptococcus. In both

instances, large doses of sulfanilamide were used leading to a high blood concentration of the sulfanilamide.

Of equal significance is the observation that despite the obvious difference in the mechanism of the production of the abscesses—in the one case through the possibility of the haematogenous route and in the other through the aspiratory route—the etiologic organisms were exactly the same. Perhaps the effectiveness of sulfanilamide was due to the fact that the organisms were identical.

University Club Building

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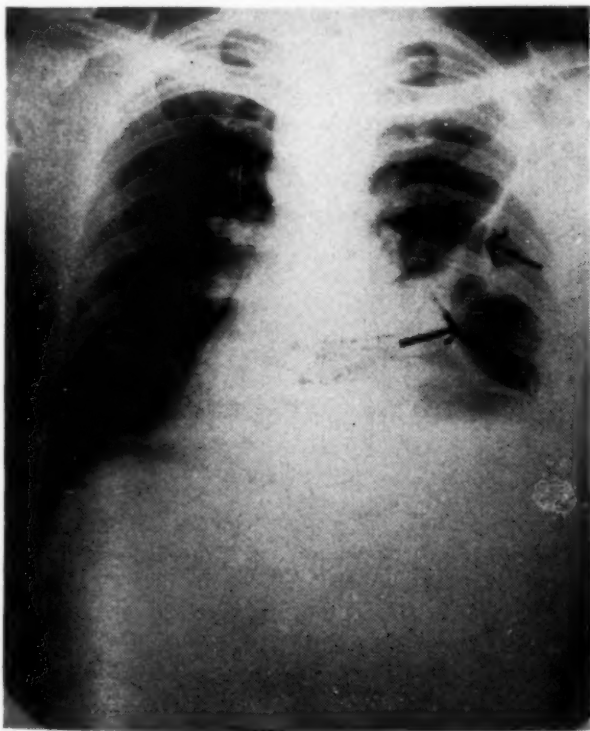


FIGURE 3 (Case 2, Sept. 4, 1940)
Shows inner wall of lower abscess as well as upper after rupture into pleural cavity producing pyopneumothorax. Arrows point to inner walls.

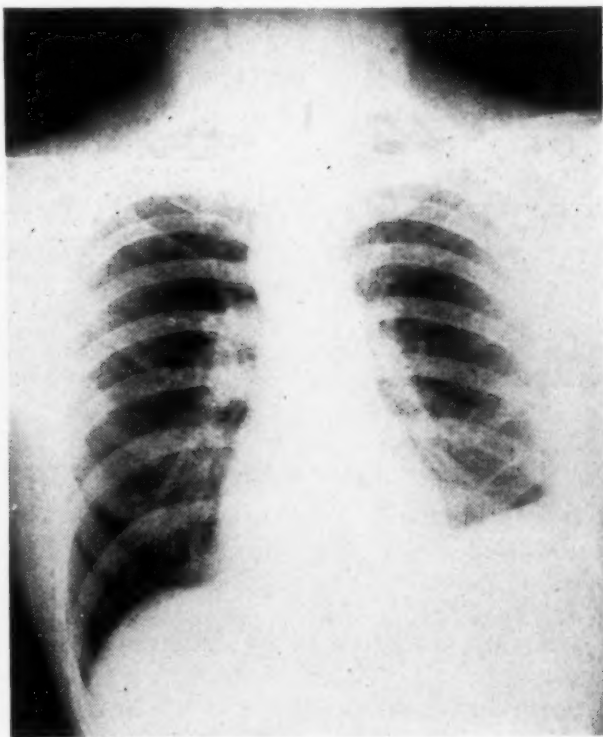


FIGURE 4 (Case 2, Oct. 31, 1940)
Shows abscesses completely healed, diaphragm elevated.

Acute Injuries to the Chest

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During the past decades outstanding progress has been made in the field of thoracic surgery. Diagnostic methods have improved. The available procedures for the management of *empyema*, both acute and chronic have become clearer and more applicable. The institution of surgical *collapse therapy* has, in the hands of the thoracic surgeon, definitely added to our success in the management of pulmonary tuberculosis. *Thoracoplasty*, perhaps the most widely employed of these major surgical procedures, is now performed in surgical clinics throughout the world. With the development of a better understanding of the clinical physiology of the thorax, it has become safer to remove *mediastinal tumors* of various types. This has been further facilitated by progress in the use of *inhalation anesthesia*, as well as by a better understanding of the prevention of anoxemia and the resultant *anoxia*.

Bronchiectasis, that formerly dread disease, is now coming under surgical control largely through the development of the modern *lobectomy*. This has become a relatively safe procedure in a number of surgical clinics. In a few the morbidity and mortality rates are astonishingly low. During the past decade it has even become possible successfully to remove the entire lung; thus, *pneumonectomy* has now been accomplished both for suppurative and malignant pulmonary diseases. Consequently, there is now afforded a means for the control of the increasingly more widely recognized *cancer of the lung*.

In the clinical researches incident to the development of these various surgical procedures, much has been learned of thoracic physiology; of the mechanical as well as the cellular requirements of respiration and of the mechanics of cardiac action and the resultant circulation. It is, therefore, readily understandable that our knowledge of the recognition and management of *acute injuries to the chest* has likewise made definite progress. Some of these advances are well established, while others are well worth discussing

even though at present they may be in a state of evolution.

Concussion of the Lung

Concussion of the lung, as related to the detonation of high explosive, was observed in World War I. However, at that time it was variously regarded as a part of the phenomenon of "shell shock," and was not particularly well understood. It was noted in combatants who fell near an exploding shell but were not actually hit by the flying fragments. It was also observed in civilian accidents, in which the individuals were badly shaken up, but seemed to have escaped more serious injury. More recently it has been frequently observed during the aerial bombing of London. The British have carefully studied the condition, and have applied to it the general term of "*Blast Injury*."

Concussion of the lung appears to be due to the pressure effects of the *blast wave* which follows the explosion of a high powered projectile, such as a bomb. The explosion results in a high pressure wave which is immediately followed by a compensatory suction wave. Thus, at any point in the immediate neighborhood of an explosion there occurs first a momentary high pressure to be followed by a negative pressure.

The *pressure wave* is highest in the immediate vicinity of the explosion, and decreases rapidly from that point. For example, at a distance of fifteen feet from an exploding 125-pound bomb, the pressure may be as high as 200 pounds, whereas at a distance of fifty feet the maximum pressure recorded will not be more than 10 pounds per square inch. The pressure recordings obviously vary with the size and weight of the exploding bomb.

The *pulmonary injury* following high explosive blast may, in theory, be due to the sudden distension of the lung alveoli by the pressure wave; to the rupture of the alveolar capillaries by the suction wave; or the lung injuries may be directly due to the *impact of the pressure wave on the collapsible chest wall*. From the recent experimental work of Zukerman it appears that the last named mecha-

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nism is responsible for the majority of blast injuries.

Zukerman exposed rabbits to the blast wave of high explosive. The majority of the resultant pulmonary lesions were found localized to the side facing the explosion. When half the animal was protected with sponge rubber, no lesions were observed if the protected side faced the explosion, but characteristic lesions were observed when the unprotected side faced the explosion. Bilateral lesions were not observed. Thus it appears that the damage is local, rather than a general traumatic effect mediated by pressure through an open trachea.

The most frequent pathologic findings in blast injuries are ruptured alveoli, ruptured alveolar vessels, and evidence of traumatic suggillating pulmonary hemorrhage. As a rule there are no fractures and no external signs of injury. It has been observed that such findings are commoner in children than in adults. This is probably because of the more elastic nature of the thoracic cage in children in whom the lungs are more easily compressed between the resilient ribs. Moreover, lesions similar to those observed in blast injuries have been described in civilian injuries where the patient received a heavy blow on the chest, yet examination revealed no external evidence of trauma. Postmortem examination of the lungs in such instances revealed pulmonary lesions identical with those described in blast injuries.

The treatment of blast injuries of the lungs is largely prevention. This is particularly true of injuries due to high explosive. If one is likely to be near an exploding bomb he should attempt to protect his chest from the resultant high pressure wave. This can be done primarily by entering a bomb shelter, or by taking shelter behind a solid object such as a concrete column, or by throwing oneself into a gutter and thus letting the pressure wave pass over the curbstone. If there is insufficient time to do more, one should fall flat on his face, since the heavy back muscles and spine afford greater protection to the lungs than the more compressible anterior chest wall. It may even be feasible in the future to devise some type of armor for the chest. This has been seriously considered.

Treatment after injuries consists largely in being acutely aware of the existence and na-

ture of such an injury, of subsequent oxygen therapy, and particularly in rest, to avoid any additional trauma that might be superimposed upon the already hemorrhagic lung.

The Control of Thoracic Hemorrhage

Injuries which disrupt the continuity of the thoracic wall may be extrathoracic or intrathoracic. The former involves only the chest wall without opening the pleural cavity, while the latter involves the heart, pleura, lung or even the diaphragm. A penetrating wound of the chest is usually intrathoracic. When caused by a shell fragment, a large opening may result. The hemorrhage that will occur as a result of such a wound may be from torn intercostal, internal mammary or even pulmonary vessels.

Hemorrhage from an intercostal vessel may be controlled by packing or by identification of the bleeding point application of a hemostat and ligature. A bleeding internal mammary artery must be ligated above and below the opening because of the double source of blood supply to these vessels. If the parenchyma of the lung is bleeding it may usually be best controlled by a continuous mattress suture into the lung substance. Accurate identification of a bleeding point in lung parenchyma is time-consuming and frequently unnecessary.

If difficulty is experienced in controlling hemorrhage from the lung substance, the lung may be partially exteriorized and sutured under direct vision. This will have the added advantage of fixation of the lung with the consequent stabilization of the movable mediastinum.

Following a penetrating wound of the thorax with but a small opening in the chest wall, *pneumothorax* may develop. The hemorrhage may be from any of the sources just described, or from deep pulmonary vessels of the central zone of the lung or about the hilus. Hemorrhage from the central zone is best controlled by compression of the lung substance.

Since the blood pressure of the pulmonary circulation is but one-sixth that of the systemic, little actual pulmonary compression is necessary to control this form of hemorrhage. Moreover, the pressure of blood alone in the developing hemothorax is often insufficient to provide pressure enough to control the

continuous hemorrhage. The bleeding may not actually stop until the pleural cavity contains two or more liters, while the loss of one and one-half liters of blood will result in unconsciousness in nearly all individuals and death in some.

Morelli, an Italian surgeon in World War I, and a pupil of Forlanini, conceived the idea of establishing pneumothorax in such cases in order to compress the bleeding lung and thus control the hemorrhage. For pulmonary injuries of this type, his method was quite successful, yet strangely enough was later abandoned and practically forgotten. Recently Foster has revived the procedure. Further, it has been observed that for some as yet unknown reason, blood within the pleural cavity will not clot, and therefore can be aspirated and even used for auto-transfusion. Meanwhile pneumothorax is established to a degree sufficient to control the hemorrhage.

This method may now be advocated for the control of hemorrhage from the central portion of the lung, which has resulted in a hemothorax. It consists of the withdrawal of blood from the pleural space through a thoracentesis needle and replacing the blood with air to produce a pneumothorax. The volume of air injected should be at least one-third greater than the volume of blood withdrawn. This method can be repeated at intervals until a sufficient degree of pneumothorax is established to control the hemorrhage. If indicated, the blood which was withdrawn may be returned to the patient as an auto-transfusion.

Pneumothorax in Thoracic Injuries

Several factors make thoracic trauma somewhat different from injuries elsewhere. The *negative pressure* in the pleural cavities and pericardium must be considered and the symptoms produced by alterations in this pressure should be appreciated. Trauma to the chest may tear the pleura and thus result in partial or complete collapse of the lung on the affected side. Penetrating wounds, such as gunshot, stab and shrapnel wounds, as well as surgical operations may thus produce an *open pneumothorax* by injuring the parietal pleura. This results in intrathoracic pressure changes which in a normal chest may rapidly lead to a fatal termination.

In a patient properly prepared for thoracic

surgery, the mediastinum has been stabilized, so that an opening into the pleural cavity is of little moment. However, in most instances of war or civilian thoracic injuries, the patient had a previously normal chest, and the consequent disturbance of the pressure relationships is followed by grave effects.

One of the most important factors is the amount of air which enters through the abnormal thoracic opening at each inspiration, and the consequent ability of the individual to compensate for the encroachment on his respiratory surface which is caused by the pneumothorax. Many investigators have stated that the size of the abnormal opening that is compatible with life is in direct relationship to the size of the glottis. If the abnormal opening is larger than the size of the glottis, the negative pressure relationships will cause the patient to draw more air through the chest wall than is drawn through the glottis and trachea. Since air drawn directly into the pleural cavity cannot reach the respiratory epithelium, it is of course useless and this will lead to progressive asphyxia. Graham has also drawn attention to the relation of the vital capacity to this phenomenon. If the patient has a high vital capacity he may often be able to compensate for abnormal openings in the chest wall which are somewhat larger than the glottis.

A factor which reduces the vital capacity in such instances is the variable amount of collapse of the lung on the affected side which follows an open pneumothorax. Another phenomenon which results in reducing the effective oxygenation of the blood in such instances is caused by the violence of inspiration and the comparative slowness with which the air escapes from the trachea during expiration. Some of the air passes from the lung with the intact pleura into the opposite lung, only to re-enter the good lung again on inspiration—a useless exchange. Brauer called this condition "*Pendelluft*" and drew attention to the degree to which this useless exchange of air decreased the effective oxygenation of the blood.

Other potentially serious complications in open chest injuries are *tension pneumothorax* and *mediastinal emphysema*. In a tension pneumothorax the tissues surrounding the injured area act as a one-way valve, permitting the air to enter the pleural cavity, yet es-

cape of the air is prevented. This results in pressure collapse of the lung, often to a dangerous degree, pressure on the mediastinum, and even in some cases mediastinal emphysema.

Tissue emphysema is frequently seen when the parietal pleura is torn. This may assume spectacular proportions, but seldom proves fatal. A more serious complication is mediastinal emphysema. This may occur after injury to the trachea or a main bronchus. The air may travel extensively through the mediastinal tissues into the neck, and from there may spread in some cases over a large portion of the body surface. The serious aspect of mediastinal emphysema is the pressure effect it exerts on the great vessels of the thorax.

A most dangerous phenomenon of open chest injuries is *mediastinal flutter*. Mediastinal flutter is dependent upon several of the factors just described and is due primarily to the normal flexibility of the mediastinum. In the presence of an open chest wound, the flexible mediastinum is drawn toward the unopened side on inspiration, and, if expiration is at all violent, as it usually is in such cases, the air escapes so slowly by the trachea that the mediastinum is forced back toward the opened side. Thus exchange of air in the unopened side is decidedly lessened, and the heart is rather violently tossed back and forth. This latter effect results in the grave complication of interfering with the diastolic filling of the heart. As the heart is swung violently from side to side with each respiration, the vena cava and pulmonary veins are obstructed so frequently that the heart, in effect, actually shuts off a part of its own blood supply.

Mediastinal flutter, if uncorrected, leads rather rapidly to a fatal termination. The condition can be prevented by stiffening the mediastinum, as is done preceding planned chest surgery; however, one must recognize and manage the mediastinal flutter which may occur following injury to a normal chest.

The *emergency management of open chest wounds* is first, control the hemorrhage, then reestablish the normal negative pressure relationships of the pleural cavities. This can usually be accomplished temporarily by applying an airtight rubber pack over the open wound. Following this the patient will, as a rule, quickly regain normal respiratory rhythm and can then be transported to an

institution prepared to accomplish major thoracic surgery.

Crushing injuries of the chest may occur in civilian life as a result of blows, falls, flying debris, automobile, airplane or railroad accidents; accidents occurring in industrial excavations such as in mines, and in crowds subjected to panic as in fires and other disasters. Under war conditions the major crushing injuries result from the caving in of trenches, of bomb shelters or of buildings. These injuries may be grouped as follows:

- (1) Minor contusions and non-penetrating wounds of the soft parts.
- (2) Concussion of the lungs.
- (3) Injuries involving interference with respiration.
- (4) Injuries followed by serious hemorrhage.
- (5) Multiple section fracture of the ribs; the "stove-in-chest."
- (6) Injuries to the heart and mediastinum.
- (7) Combined thoracic and abdominal injuries.

The symptoms associated with *lesser chest injuries* consist chiefly of hemorrhage and interference with normal respiration. Because of the dynamics of the chest, however, these simpler conditions may present serious complications. Their recognition as well as management has been presented. Patients with severe crushing injuries are usually in *shock* when first seen, and this may mask the seriousness of the thoracic damage. With recovery from shock, any or all of the aforementioned symptoms may be observed depending upon the nature of the injury.

Multiple section fractures of the ribs present loss of rigidity of a large portion of the chest wall, with resultant *paradoxical respiration* and mediastinal flutter in addition to hemorrhage and the more common types of interference with respiration. The initial treatment required is rapid control of the hemorrhage, then stabilization of the chest wall by applying a firm dressing and strapping the chest on the affected side. Oxygen is administered by intranasal catheter, and when the respiratory balance has been regained, the patient may be transported to a hospital equipped for major thoracic surgery.

Combined thoracic and abdominal injuries require first emergency treatment of the chest

injury. When thoracic hemorrhage has been controlled, respiratory balance has been regained, and the patient has recovered from shock, exploration of the abdominal injury is indicated. In most instances the abdominal approach is preferable. Through a laparotomy incision the abdominal organs may be adequately explored and wounds of the diaphragm sutured from below. At a later date, if indicated, *reconstructive chest surgery* may be accomplished.

Injuries to the heart and mediastinal structures are not necessarily immediately fatal. Wounds of the heart, which may be successfully sutured, are usually caused by a knife or ice pick. Elkin recently reported thirty stab wounds of the heart in which the patients survived long enough to be transported to the hospital where suture was successfully accomplished. The history in these cases is usually characteristic. There are no symptoms for several minutes, but later there ensues exhaustion and loss of consciousness. This sequence of symptoms is due to a gradual tamponade of the heart. At first bleeding may be profuse, but when one to two hundred cubic centimeters of blood has collected in the pericardium the heart becomes compressed, contractions become weak and the profuse hemorrhage ceases. However, with the rise in intrapericardial pressure, the vena cava can no longer empty normal quantities of blood into the right heart and cerebral anemia eventually results. The treatment consists of rapid incision into the pericardium to release the cardiac compression, followed by suture

of the heart wound. Gunshot wounds of the heart are more likely to prove fatal before the patient can be transported to a properly equipped hospital, but the same principles of diagnosis and treatment are applicable.

Attention is now being drawn, particularly in England, to the frequency of non-penetrating wounds of the heart. Contusion of the heart may occur in any severe compression of the midportion of the anterior chest wall. The most common causes of this injury are "steering wheel accident," mine cave-ins and bomb blasts. The immediate cause of the injury is the forceful impact of the lower portion of the sternum against the heart, resulting in contusion of the myocardium.

Initial symptoms in patients who survive the immediate effect of such trauma to the heart are transient collapse, precordial pain, dyspnea and palpitation. A symptom-free period often follows in which the patient feels well and is even able to exercise normally. Physical signs include an increase in the area of cardiac dullness due to pericardial effusion, weakness and muffling of the heart sounds, abnormalities in rhythm and a persistent tachycardia with a normal temperature.

The treatment is extended rest in bed along with symptomatic and supportive management. Early diagnosis and adequate rest are essential to prevent cardiac rupture during the symptom-free period in many patients who have sustained a severe contusion of the heart.

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The Management of Genito-Urinary Tuberculosis*

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Most of our experience in the treatment of tuberculosis of the urinary and genital tracts at Sea View Hospital has been limited to patients with associated active pulmonary or bone tuberculosis. Many individuals with isolated organ tuberculosis of the urinary and genital tracts, have also been referred to this service, some having had operations and requiring only sanatorium care or treatment of the various complications of tuberculosis surgery, such as sinuses, fistulas, amyloidosis, intractable tuberculous cystitis, and tuberculosis of single remaining kidneys. In the case of the latter, signs of uremia are at times exhibited on admission.

These patients show remarkable ability to tolerate urologic surgery, and procedures usually reserved for fairly good operative risks can be performed when necessary. They have the advantage, at Sea View Hospital, a 2,000 bed municipal tuberculosis hospital in New York City, of prolonged hospitalization and restricted activity, which is usually not available to the private or ward patient in the general hospital.

It is vital to treat all foci of tuberculosis continuously to obtain satisfactory results. A medical consultant supervises treatment of pulmonary tuberculosis on the urologic ward, neither lesion being neglected, and patients are treated jointly by medical and urologic residents. Artificial pneumothorax, thoracoplasty and pneumonolysis are not contraindicated, nor are they interrupted by genito-urinary surgery. It is occasionally necessary to delay some chest or bone surgery for two or three weeks while the patient is convalescing from a urinary tract operation. Such procedures as pneumothorax refills or application of plaster casts need not be delayed.

Renal Tuberculosis

Pathogenesis and Pathology—Pathologic study at our institution has convinced us that

the vast majority of isolated organ tuberculosis of the kidney (surgical kidney) is the result of a hematogenous infection from pulmonary or skeletal lesions.

The typical tuberculosis lesion in its early stages is an ulcer at the apex of the pyramid, usually located in the upper pole of the kidney. The fate of this lesion will in great part depend on the condition of the ureter. If the ureter becomes secondarily infected from the renal lesion and undergoes obliterative changes, a damming back of the tubercle bacilli will occur, and extensive destruction of the renal parenchyma will result. If the ureter remains patent, the renal lesion at the apex of the pyramid progresses towards the base, with subsequent infection and destruction of the lower pyramids.

Careful sectioning of apparently normal kidneys of individuals with tuberculosis in other organs into 1 and 2 mm. sections, reveals a high incidence of miliary tubercles. In some instances microscopic examination shows the foci to have ruptured into tubules, thus accounting for the presence of a tubercle bacilluria with negative clinical and pyelographic findings of renal tuberculosis.

Healing of Renal Tuberculosis (Ulcerative Type)—Formation of "Cement" Kidney—Complete calcification of the caseated kidney produces the so-called "cement kidney" of the French. Such calcification has been found only three times in the past eight years at Sea View Hospital. We feel this represents a "true autonephrectomy" and no surgery is indicated in the absence of symptoms or findings.

Possible healing of a tuberculous excavation may occur by sloughing out of the caseous material followed by fibrosis of the surrounding granulation tissue.

Diagnostic Pitfalls—In the diagnosis of a surgical ulcerocavernous type of renal tuberculosis, the most accurate data are pyuria and the finding of tubercle bacilli in the urine collected from the suspected kidney by ureteral catheterization, together with urographic

* Read before the Seventh Annual Meeting of the American College of Chest Physicians, Cleveland, June 1, 1941.

evidence of changes in the renal architecture.

The danger of contamination has been recognized, but urologists are not always aware of the inadequacy of the commoner methods of cleansing and sterilizing urologic equipment. By studies in Petroff's laboratory, using an acidified Tergitol mixture, members of our staff have shown that formalin, mercury cyanide, and mercuric chloride are unsatisfactory for cleansing and sterilizing ureteral catheters. These preparations do not completely remove leukocytes, erythrocytes, or bacteria, including the acid-fast bacilli. On the other hand, irrigation of catheters with acidified Tergitol prevents erroneous diagnosis of pyuria or tubercle bacilluria resulting from contamination of specimens.

For accurate diagnosis of unilateral disease, specimens are collected from both kidneys, guinea-pigs inoculated to corroborate results of smears and cultures, and bilateral pyelography is performed. We have found no contraindication to the use of hippuran, skioldan, or neo-iopax in carefully controlled bilateral retrograde pyelography in over 2000 tuberculous patients.

Medical Treatment

Medical treatment will not cure genitourinary tuberculosis except in rare cases. The response of experimental tuberculosis to sulfanilamide derivatives has been reported, but is uncorroborated. We have noted no definite value in the use of tuberculin as yet. We have had no favorable results with "tuberculosis diets," preferring a high caloric, high vitamin diet. For palliation of bladder symptoms, "shot-gun" mixtures of methylene blue, santal oil, gomenol, and antispasmodics have proved more efficacious than most local anesthetic preparations. Secondary infections of tuberculous sinuses and cystitis occur, and several cases have healed during courses of oral neoprontosil.

Quartz light therapy, general and local (intravesical) has shown no appreciable results, but we continue its use in order to determine its value over a longer period of time.

The value of an adequate period of sanatorium care cannot be overemphasized. With improved nutrition, enforced rest, and good hygiene, healing is promoted.

Surgical Treatment

Nephrectomy and nephro-ureterectomy, combined with sanatorium care, comprise the curative treatment of urinary tract tuberculosis at the present time.

When associated with pulmonary or bone tuberculosis, the diseased kidney should be treated prior to or simultaneously with the other tuberculous foci, unless the other lesions require emergency therapy (pulmonary hemorrhage, spontaneous pneumothorax, spinal cord compression due to Pott's disease).

Treatment of renal tuberculosis may be necessary in the far-advanced stage of pulmonary disease in order to relieve symptoms, such as intractable lumbar pain or urinary tract hemorrhage.

Procedures for Nephrectomy

(1) *Pneumothorax Refills*—These are given on the day preceding operation when indicated.

(2) *Preoperative Medication*—This includes $1\frac{1}{2}$ to 3 grains of phenobarbital and $1/150$ to $1/200$ grain of atropine sulfate.

(3) *Anesthesia*—Spinal anesthesia is preferable if there is no tuberculous involvement of the lumbar spine. One hundred and twenty to 150 mg. of neocaine are injected in 2 or 3 cc. of spinal fluid. Ephedrine is given routinely following spinal injection of the anesthetic. When spinal anesthesia cannot be given and supplementary anesthesia is necessary, cyclopropane is well tolerated.

(4) *Transfusion*—Immediately after the patient is placed in position for operation, a saline infusion is started, either into the cubital vein or by insertion of a cannula into the vein at the ankle. From 500 to 1000 cc. of compatible blood from the "blood bank" is given during and immediately after operation. Since inauguration of the "blood bank" and the liberal use of blood, we have had no occurrence of operative or postoperative shock.

(5) *Oxygen*—Oxygen is administered by nasal tube during and after operation. This therapy gives the patient greater comfort and relieves air hunger, evidenced by improvement in color.

(6) *Rib Resection*—Removal of the twelfth rib, occasionally with the eleventh rib, is performed whenever pyelograms show the size

or situation of the kidney to be such that it is apt to be traumatized during delivery. The excision of these two floating ribs, through the lumbar approach according to the method of Dr. Davidson and the late Dr. Coryllos of the Thoracic Surgery Service, occupies two to three minutes and permits a simple atraumatic delivery of the kidney. Care must be taken to avoid a pleural tear during costectomy. Rib resection is of especial value for lumbar nephrectomy in the presence of extreme scoliosis, inasmuch as the transperitoneal route is contraindicated in renal tuberculosis.

(7) *Technic of Nephrectomy*—Our patients are usually not in condition to tolerate the long duration of the successful extensive nephrectomy for tuberculosis advised by Aschner with "en masse" removal of the perirenal fat and Gerota's fascia. We remove as much as possible of the perirenal fat attached to the kidney, since this tissue favors the development of postoperative sinuses if not removed. At the same time, it provides a cushion guarding against traumatizing the kidney during operation. The vessels are isolated, the three-clamp technic applied, and they are then doubly ligated and cut. The ureter is excised only after the pedicle has been cut, to prevent backflow of pelvic contents into the blood stream during manipulations.

(8) *The Care of the Ureter*—This depends on the type of operation. For a more favorable prognosis, more rapid relief of cystitis, and less danger of sinus formation, nephroureterectomy is advisable in patients who can tolerate the longer operation. During nephrectomy the ureter may be freed as far down as possible together with its fascial coats. It is clamped, cut, and tied and its distal stump carbolized. However, if ureterectomy can be performed, the kidney and the upper ureter are brought out through the lower angle of the lumbar wound, the remainder of which is closed. The patient is turned on his back, a lateral rectus incision is made, and the lower end of the ureter is isolated extraperitoneally near the bladder while an assistant pulls on the externalized kidney and the upper ureter to guide the surgeon. At the entrance into the bladder, the ureter is clamped, ligated and cut, both cut ends being carbolized. A sterile finger cot should be tied over the proximal end of the ureter and the entire freed ureter

removed by traction on the kidney. The value of ureterectomy is evident since there is an occasional occurrence of empyema of the remaining ureteral stump.

(9) *Closure*—With careful surgical technic, strict asepsis, and careful hemostasis, closure is best performed in layers, the entire wound being closed tightly without drainage. This tight closure allows infrafascial walling off and healing of any residual tuberculous inflammatory tissue without development of a sinus, unless there is massive infection in the perirenal tissues.

(10) *Postoperative Care*—In addition to continued use of oxygen and blood transfusions postoperatively, the immediate care is similar to that employed for the non-tuberculous nephrectomy. We insist upon a minimum of six months of sanatorium medical management following nephrectomy.

Management of Complications

(1) *Tuberculous Postnephrectomy Sinus*—This is one of the most frequent complications for which patients are referred to Sea View Hospital. Urologists have frequently discharged their patients with the advice that such sinuses would close in "six months to a year." Many sinuses do close up rapidly on a sanatorium regimen and wound irrigations. Triolein ozonide, silver nitrate, cod liver oil, ether, azochloramide, gentian violet, methylene blue, and other chemicals have been used, each occasionally being associated with cures. Surgical revision is indicated for a sinus which shows no evidence of healing following a period of non-operative therapy.

Sinuses may burrow into the peritoneal cavity or thoracic cage, resulting in tuberculous peritonitis and bronchial or pleural fistulas. Amyloidosis due to the chronic supuration of tuberculous sinuses is common.

Sinus revision allows more rapid rehabilitation of the patient, especially if the extra-urinary tract lesions are minimal. Preoperatively, complete roentgenologic study of the tract and its ramifications is made following lipiodol instillation. Methylene blue is injected prior to surgery. The skin edges of the sinuses are excised, together with all of the tissue surrounding the tracts. It may be necessary to resect infected tissues from the surfaces of the peritoneum, psoas muscle, and the diaphragm. The ureteral stump may be

the source of the wound infection, and may require extirpation to prevent recurrence of the sinus.

(2) *Tuberculous Cystitis*—The persistence of tuberculous cystitis for a considerable period after nephrectomy requires attention. Bladder contraction frequently follows a long-standing infection. Occasionally, a tuberculous empyema of the ureteral stump drains into the bladder and must be resected for relief of the cystitis. Patients with marked contraction and infection of the bladder are referred to our service following surgery elsewhere, and when medical treatment gives no relief, palliative surgical measures are necessary.

Suprapubic cystostomy is unsatisfactory in most cases. The patients have difficulty in tolerating the tube. Cough and expectoration are inhibited by the pain on coughing, and the pulmonary disease has been found to advance much more rapidly.

Presacral neurectomy for intractable bladder pain has resulted in incomplete relief of symptoms, although some complaints of dysuria and frequency were lessened.

Cutaneous ureterostomy has proved to be a valuable palliative procedure. The possibility of latent tuberculous involvement of the ureter or bowel endangers the implantation of the ureter into the sigmoid because of the tendency toward sinus and fistula formation in surgery of tuberculosis. Cutaneous implantation of the ureter is a less formidable procedure and gives relief of symptoms. It has no harmful effect on the pulmonary status. Patients can be kept comfortable and dry with the use of either ureterostomy tubes or cups, and ambulant patients are able to care for the apparatus themselves. This procedure has been considered as a palliative measure for the most part. However, we had the opportunity of observing Dr. E. L. Keyes' patient two years after cutaneous ureterostomy had been performed on a single remaining kidney for relief of a tuberculous cystitis. The patient, aged thirty, was in perfect health, completely dry, and had no bladder symptoms, did her own housework, and recently passed through a normal pregnancy. Undoubtedly the healing of the bladder in these cases is due to complete rest and absence of tubercle bacilli-laden urine.

(3) *Bilateral Ulcerative Renal Tuberculosis*

and Tuberculosis of the Single Remaining Kidney—Such patients, with and without manifest pulmonary disease are referred for custodial and sanatorium care. Palliative treatment is advisable and every effort is made to preserve the remaining renal parenchyma.

Nephrostomy has proved safe and allows excellent drainage, especially with partially obstructed kidneys due to stricture or caseation of the ureter.

With urographic evidence of tuberculous hydro-ureter, cutaneous ureterostomy seems preferable at present.

These patients have a remarkable ability to survive surgery and to continue a comfortable ambulatory regimen. After a period of drainage, some cases show little evidence of progression of disease and the tubercle bacilluria diminishes.

(4) *Tuberculous Meningitis*—This has been relatively uncommon following nephrectomy on our patients with pulmonary disease. The importance of pre- and postoperative sanatorium care, and the building up of the patient's resistance may be factors in arresting other hematogenous foci.

(5) *Postoperative Spread of Pulmonary Disease*—This has become rarer with the almost routine use of spinal anesthesia. Cyclopropane inhalation has shown no harmful effects, probably due to a rapid postoperative recovery of the ability to cough and expectorate pulmonary secretions.

(6) *Postoperative Pneumonia*—In patients with pulmonary tuberculosis, urologic surgery has resulted in no postoperative pneumonia at Sea View. One would expect these patients to be more prone to this complication, but none has developed pneumonia on our service.

Genital Tuberculosis

Genital tuberculosis almost always has occurred in patients with pulmonary or skeletal tuberculosis. Treatment has been palliative, directed toward arrest of the disease and relief or prevention of complications by epididymectomy or orchidectomy. We believe that radical excision of the genital tract entails a formidable surgical procedure for individuals in such comparatively poor condition.

Incidence—Statistics accumulated in our Departments of Urology and Pathology show the frequency of involvement of multiple por-

tions of the genital tract. A cure, according to Young, requires the radical excision of the prostate, seminal vesicles, vasa, epididymides, and occasionally the testes. In the series of 748 tuberculous males autopsied during the past five years by Dr. Auerbach, genital lesions were found in 105 (14.4 per cent). In seventy-one instances there were no renal foci, while thirty-four cases had associated urinary tract tuberculosis, sixteen showing gross or microscopic evidence of tuberculosis of the bladder. The ages ranged from nine to seventy-seven years. Since 100 of this group (95.2 per cent) had active tuberculosis of the prostate, removal of the entire gland would seem necessary for a cure. Only five cases were found with involvement of the external genitals alone. Seminal vesicle lesions were present in sixty-five patients, being bilateral in forty-one and unilateral in twenty-four. Epididymal involvement occurred fifty-one times, in thirty-six instances being bilateral and in fifteen unilateral. The testes were least commonly affected, being secondary to epididymal tuberculosis, and were tuberculous in thirty-one cases, of which twenty-four were bilateral and seven unilateral.

Diagnosis—With the presence of extragenital tuberculous foci, the diagnosis of genital tuberculosis is more certain. Uncomplicated early tuberculosis of the prostate and seminal vesicles is asymptomatic.

Significant clinical findings include the asymmetry of the two lateral lobes, irregularity and nodulation, moderate induration, and less often, enlargement or tenderness of the prostate. We have had three cases of rectoprostatovesical fistulas due to slough in prostatic tuberculosis.

When palpable, the seminal vesicles are distended, nodular, indurated and tender. We have been able to make bacteriologic diagnoses, finding the organisms in the prostatic fluid, but such investigation is contraindicated by the danger of dissemination following massage or other trauma to the prostate.

The onset or exacerbations of tuberculosis of the epididymis may occur with acute swelling, pain and fever. Hydroceles form in some cases. On examination the epididymis is similar to the acute gonorrheal or the nonspecific epididymitides. There is often a history of recent trauma or gonorrhea. Epididymal tuberculosis may perforate through the scrotum

at any time to form sinus tracts. The chronic stage of the disease gives no symptoms, except of the presence of the sinus from which tuberculous granulation tissue can be curetted. The involved portion of the epididymis is enlarged, indurated, and nodular, although in early cases, palpation reveals only a small irregular nodule which may be confused with the hydatid near the head of the epididymis. The globus minor is a common site of early involvement, but destruction of the entire epididymis may occur. Preoperatively, we have been unable to diagnose tuberculosis of the testis without evidence of disease in the epididymis, since the lesions of both parts merge and give identical physical findings.

Medical Treatment

Medical or expectant treatment of genital tuberculosis has proved unsatisfactory in our series. Patients with tuberculosis of the epididymis or testis are apt to develop scrotal sinuses and miliary tuberculosis. The testis is continually exposed to all types of trauma and does not have the advantage of rest and protection available to the prostate. If the epididymectomy or orchidectomy is not feasible, use of scrotal suspensories and bed rest is advisable in those patients. The ages of patients treated have ranged between twenty-five and seventy-five years.

Surgical Treatment

Epididymectomy or orchidectomy has been satisfactory in controlling the genital disease on the affected side. We do not hesitate to perform orchidectomy if the patient is over fifty years of age. With relaxed scrotum and the atrophic cremasteric and scrotal tissues in older individuals, the danger of trauma and sinus formation is diminished and the period of operative disability is lessened when orchidectomy rather than epididymectomy is performed.

Procedures in Epididymectomy

(1) *Anesthesia*—Local or low spinal (50 mg.)

(2) *Ligation of Vas Deferens*—The vas deferens on the apparently normal side is routinely ligated prior to epididymectomy or orchidectomy for tuberculosis of the opposite side. This has been done as a prophylactic measure, but we have seen a number of tu-

berculous epididymides develop at a later date on the side of ligation. At this writing, we are not convinced of the efficacy of this preventative step.

(3) *The Incision*—Since tuberculous epididymides are usually operated upon after having become adherent to the scrotal wall, the incision must be carried low enough to avoid excess tearing and cutting to free the testis from surrounding scrotal tissues. All sinus tracts must be completely excised. At the external ring the vas deferens is isolated, cut, ligated, and carbolized. The free portion is removed with the epididymis.

(4) *Cutting Into the Tuberculous Epididymis*—This should be avoided if possible. A line of cleavage may be found between the lower pole of the organ and the tunica albuginea even when the digital sinus has become obliterated by inflammatory reaction. However, if the tuberculous process has extended into the testis, or if the testis feels nodular after the epididymis is removed, orchidectomy is indicated.

(5) *Blood Supply to the Testis*—This must be carefully preserved to prevent atrophy. By following the vas deferens from the spermatic cord inferiorly, the demarcation of the vessels from the head of the epididymis may be observed.

(6) *Closure*—A strip of rubber dam is inserted for drainage of the operative field and it is brought out through a counterincision at the most dependent portion of the scrotum. The original scrotal incision is closed completely by means of interrupted silk sutures.

(7) *Postoperative Care*—Adequate postoperative scrotal support will aid healing and will permit the patient to become ambulatory in a shorter period. The use of a scrotal suspensory is also of aid in applying dressings.

As in the treatment of renal tuberculosis, postoperative sanatorium care including rest and a high caloric diet, is essential.

Summary

- (1) Urogenital tuberculosis is of hemato-

genous origin and is never primary.

(2) Tuberculosis is not limited to the genitourinary tract; therefore close cooperation with the internist is essential.

(3) Miliary lesions may cause tubercle bacilluria with normal pyelographic findings.

(4) Healing of renal tuberculosis by calcification ("true autonephrectomy") or by slough of caseous material rarely occurs.

(5) The commonly employed cleansing and sterilizing agents fail to remove acid-fast bacilli from ureteral catheters, a possible source of diagnostic error.

(6) Bilateral retrograde pyelography is not contraindicated in tuberculosis.

(7) Sanatorium care is important, pre- and postoperatively.

(8) Surgical details of nephrectomy and ureterectomy include: proper preparation, anesthesia, transfusion, oxygen therapy and atraumatic technic (rib resection, removal of perirenal fat, ureterectomy).

(9) Sinuses, fistulas, amyloidosis, cystitis, meningitis, postoperative spreads and bilateral renal tuberculosis are discussed.

(10) Cutaneous ureterostomy plays an important role as a palliative procedure.

(11) Nephrostomy has been found to be safe and beneficial when indicated.

(12) Genital tuberculosis occurred in 14.4 per cent of male autopsies, of which 95.2 per cent showed prostatic involvement.

(13) Medical treatment of genital tuberculosis is unsatisfactory.

(14) Radical removal of the entire genital tract (Young) appears logical for patients with a satisfactory pulmonary status. No favorable case has been admitted on our service.

(15) Epididymectomy or orchidectomy is advisable to prevent traumatizing of these exposed tuberculous foci.

(16) Surgery for the tuberculosis of the external genitals requires attention to anesthesia, prevention of spillage, removal of sinus tract, preservation of blood supply, proper dependent drainage, and satisfactory scrotal support.

Nutrition in Tuberculosis

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The widespread recognition of the importance of certain food essentials which might be lacking in our diets makes it imperative that physicians take a leading part in the newer knowledge of nutrition.

When Dr. James S. McLester,¹ author of an excellent book on nutrition from the clinical viewpoint, gave his presidential address² to the American Medical Association in 1935, he said:

"In the past, science has conferred on those peoples who availed themselves of the newer knowledge of infectious diseases better health and a greater average length of life. In the future it promises to those races who will take advantage of the newer knowledge of nutrition a larger stature, greater vigor, increased longevity, and a higher level of cultural attainment. To a measurable degree, man is now master of his own destiny where once he was subject only to the grim hand of fate."

It is particularly important to make full use of the newer knowledge of nutrition in tuberculosis because nutrition is a foundation principle fully as worthy of our attention as are rest and fresh air. In fact, like rest and fresh air, nutrition requires time for the body to obtain its full effect.

In considering the general condition of our patients, it is neither necessary nor advisable to strive for overweight. The optimum weight for the particular individual should be sought for by a highly protective diet. In tuberculosis, metabolism is not increased as much as it is in other fevers. Only severe cases and high temperature cases show much increase. McCann³ found nitrogen excretion to be less than in other infections and that it is not difficult to establish nitrogen equilibrium with low protein intake. Protein exerts the same specific dynamic action in tuberculosis cases as is seen in normal persons. McCann states also that protein and carbohydrate increase materially the volume of respiration as well as the total metabolism. Fat, however, does not possess this disadvantage. In his work, 100 grams of cane sugar increased pulmonary ventilation 60 per cent, while 140 grams of

fat increased pulmonary ventilation only 12 per cent.

This work of McCann strengthens the claims that were made many years ago in favor of high fat diet in tuberculosis. The common knowledge that fat digests much more slowly than either protein or carbohydrate and that an excessive amount for the individual causes digestive disturbances, led to an effort to prepare fats in easily assimilable form and probably to the common advice, "Use plenty of cream." Fat is an essential in nutrition and its lack is very promptly felt in a national food supply. It has a more sharply defined range as to proportion in our diet than either protein or carbohydrate. Before cod liver oil was standardized at a high vitamin "A" potency, the dose was large enough to include an appreciable amount of fat. In giving cod liver oil values at the present time, I feel justified in using straight cod liver oil when it is well handled. McLester¹ suggests a moderately high protein diet for tuberculosis in the newest edition of his text published last year. Authorities now follow the principle set forth by McLester with the general condition rather than the tuberculosis in mind.

The protective values should be sufficient from three standpoints:

- (1) To maintain optimum general health.
- (2) To meet special needs in tuberculosis.
- (3) To meet the needs of the individual patient according to his disease.

Optimum health is an ideal which cannot be considered as clearly definable. We can strive for it by having in mind an adequate supply of proper food at the various times when the body chemistry needs it for growth, development in the broadest sense, and for disease resistance. Various patterns of inheritance require their particular supply of food values as do different periods of life activity. Experiences, including disease, alter requirements. Deficiencies cause both reversible and irreversible effects.

Protective values should be sought for in foods because of the permanent value of a proper supply and because of the long duration of the pathology of tuberculosis in its

broadest aspect. Special preparations should be used to meet special needs and during temporary periods when an adequate supply through foods is in question. Foods are not yet marketed or prepared on the basis of a uniform supply of some of our most vital food essentials.

The protective values that seem to require our special attention in tuberculosis are vitamins A, C, D and the minerals calcium, phosphorus and the small trace of iodine that could have no drug effect.

A number of problems confront us as we attempt to supply the various food essentials to our patients. General advice to take each day a quart of milk or its equivalent in milk products; some meat; an egg; at least two vegetables, one leafy one, in addition to potatoes; at least two fruits, one raw with citrus fruits or equivalent; and whole grain bread with butter and whole grain cereal with cream would seem to fill the bill if the food items selected are of such quality and type as to contain what you expect them to; if the patient can and will use them as you expect; and if the total calories consumed are high enough to furnish the totals you wish in the various essentials.

The protective values of foods vary within the season and with the seasons, also with the soil, climate, etc., etc., as well as the varieties, freshness, method of storage, preservation and preparation for the table. Oranges purchased during the past three years for our use have ranged in ascorbic acid content from 66 to 33 mg. per 100 cc. of juice. We stopped having the night nurses squeeze orange juice because we found we had lost 25 per cent ascorbic acid by the time we were ready to serve it the next day. Then we found that if placed in completely filled and sealed jars and refrigerated, the loss was not serious in two days. Some juices hold their ascorbic acid content much better than do others; tomato juice much better than orange juice for example, but any juice used for its ascorbic acid should be used as fresh as possible and should be sealed as noted above if it is to be refrigerated more than an hour or so.

We have found strawberries to range from 115 mg. per 100 Gms. to 35 mg. The test of 35 was in wild berries which, with boyhood memories, I brought into the laboratory expecting the test to run no less than several

hundred. I have been interested in noting that many tests reported from eastern localities rate the strawberries at around 35. All from our locality have tested around an average of 75 to 95 when prime ripe fruit was selected. Properly frozen strawberries are found richer than oranges 6 to 8 months after being frozen. Tomato juice of the best brands in our market is found twice as rich in ascorbic acid one season as compared with another. Commercial canners have taken special pains to deliver high quality products to our tables but only recently have they learned to keep their eye on ascorbic acid and other vitamins. Two years ago at San Francisco, I asked the representative of one of our best known food companies about the ascorbic acid value of a certain product only to have my question politely dismissed by the remark that they did not want their products thought of as "health foods." Today that same company has a special staff to keep us informed on the food values, including vitamins, that are to be found in their products.

Calcium holds quite true in milk and its products, including all forms of high grade cheese. In this respect, roquefort is lowest and cottage cheese highest with calcium representing an eight time concentrate of milk (approximately), but cottage cheese in the making has lost half of its phosphorus, half of its vitamin B, much of its G, and most of its A and its iron.

Vitamin A in butterfat varies over an extreme range according to the feed taken by the cow and therefore with the seasons and the feed selected.

It is quite generally accepted that vitamin A is associated with the integrity and function of epithelial tissues including the skin and the mucous membranes. Dr. Manville¹ and his associates at the nutritional laboratory of the Oregon Medical School have made a special study of this premise. After reviewing the literature on lysozyme pointing to this as a bacteriolytic and bacteriostatic agent present in practically all mucous membranes, they carried on a carefully controlled study from the report of which I quote:

"Because of these findings, we believe that vitamin A and uronic acids act as trigger mechanisms in the secretion of lysozyme in mucus. Animals deficient in these two factors can still produce lysozyme in their tissues

but are unable to utilize it as a defense mechanism."

Among the vitamins, ascorbic acid has received the most attention as directly associated with tuberculosis in a clinical sense. Inferences are often drawn as to a relation between lack of vitamin C and tuberculosis. Considerable literature has accumulated in which it is reported that animals and patients suffering from scurvy are especially susceptible to tuberculosis. J. A. Hojer⁵ made an extensive study along this line and concluded in part:

"From a therapeutic point of view it may be said that my investigations suggest the importance of supplying a sufficient fully protective antiscorbutic dose to persons in whom the healing of a tuberculous process is aimed at . . ."

In 1937, Dr. Sweany⁶ and his associates at the Chicago Municipal Sanatorium made a very thorough study, well controlled, of the effect of vitamin C on complete blood cytology and significant blood chemistry in tuberculosis cases. The results were not discouraging. Martin and Heise,⁷ and Bumbalo and Jetter⁸ have reported from studies of vitamin C in tuberculosis, that there is an excessive utilization of this substance in certain cases and that this phenomenon often parallels the clinical activity of the disease. Sweany⁹ has shown that vitamin C is excreted through the sputum often times in considerable quantities.

In our service, we have routinely titrated the excretion of ascorbic acid in twenty-four hour specimens of urine for more than two years. Extremely low findings are common in patients on admission. As much as 400 mg. of ascorbic acid daily must be prescribed in addition to their foods to bring some cases to a satisfactory normal. Others whose disease is promptly brought under control will easily reach normal from a menu containing approximately 70 mg.

It is apparent that vitamins and minerals are utilized by the body under certain limitations as to quantity. Excessive amounts are only excreted, though under certain conditions large amounts may be utilized. The recent finding that ascorbic acid enters into the chemistry of collagen gives us encouragement that it may be of some value in healing.

Nutritionists are guiding us faithfully as

new facts come into being, but progress is not without flaws. It would have been quite fortunate if a window glass had been invented that was not opaque to the ultraviolet radiations of the sun. More recently we have acclaimed enthusiastically, while the flour milling companies have refined the vitamin B values out of our most dependable food source of this vitamin. Our grandparents used a flour with approximately 5 times the vitamin B value of the white flour we now use, and also they used more of it.

The physician has only to think to become aware of the inadequacies that may lurk in his special diets and of the interferences that may be associated with certain conditions.

Modern life, invalidism and orders for rest so often reduce the total caloric intake that we must be mindful of food essentials.

The excellent scientific work which recently showed riboflavin to be a constituent of the tubercle bacillus was seized upon by the scoop specialist of the public press to feature a new cure for tuberculosis—a substance, common in foods, nourishes the tubercle bacillus. Avoid it and be cured of your disease. By the same token, our patient would avoid proteins, fats and carbohydrates all of which are found in the bacillus.

Scientific studies, honest and thoroughly accurate in the abstract, are often distorted in meaning and greatly discounted in value by hastily drawn conclusions. Not infrequently these conclusions are drawn quite sarcastically in the face of honest convictions from practical experience. The use of iron, which by the way enters into our body chemistry much like some vitamins are known to do, illustrates this unfortunate condition in research. Around 40 years ago we were being offered iron as tincture ferric chloride. To this preparation we could rightfully object, although it did give us iron in a valuable form for nutritional and secondary anemias. Soon the most popular form was Blaud's mass as a freshly prepared ferrous salt. This was found quite efficient but its liability to oxidation was well recognized as objectionable. A saccharated form became official. This controlled oxidation quite successfully but the iron was diluted seriously though still leaving sufficient iron to meet the need in slight nutritional anemias. Then the high pressure group for organic iron took the saddle. We

were only kidding ourselves with inorganic iron preparations, they said. Then came the big dose parade and back to inorganic iron—even the element itself as reduced iron if the dose was large enough. Many of those finishing medical school ten years ago couldn't think of iron in any other form, but the drama of new ideas in iron was coming to a close. Physiologists and biological chemists had learned much about the absorption and utilization of iron and we drop back more or less gracefully to the ferrous iron much as we had it 30 and 40 years ago. In this new field of nutrition let us keep our feet on the ground and try to avoid hasty and wishful conclusions while at the same time being wide awake to the truly great possibilities in store for us.

Volumes of literature, both lay and scientific, have appeared on experimental and practical phases of the newer knowledge of nutrition. Many books including several excellent ones for medical men are available. Most of the important scientific programs held in this area during recent years have

had at least one principle paper on this subject. Little have been written bearing directly on nutrition in the clinical phase of tuberculosis, still we have a background for reasonably safe deductions. Because of the short time available for each paper and the many interesting subjects to be presented, I have tried to be concise. I hope that I have not been too arbitrary nor taken liberties too recklessly.

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Rest in Treatment of Tuberculosis*

SAVERE F. MADONNA, M.D.**
Philadelphia, Pennsylvania

Up until approximately 60 years ago, the treatment of tuberculosis consisted chiefly of exercising in the open air, outdoor exercise for long hours, daily walking, driving, horse-back riding and even mountain climbing. It wasn't until the development of the Sanatorium in which careful observations were made on the effects of these exercises on tuberculous patients that the rest cure came into the foreground as the most important factor in combating the disease. "Rest" is the most important single factor in the treatment of pulmonary tuberculosis.

How can one hope to heal a broken arm with motion, or build up a cardiac reserve

when the heart is asked to do more work. In the same way, how can one hope to heal a broken down lung with exercise. Exercise which means increased metabolism, increased respiratory rate, increased circulation and increased fatigue with further lowering of body resistance, increased absorption of toxins and consequent increased toxemia. It cannot be done. By resting, metabolism is slowed down, circulation is slowed down, absorption is lessened, toxemia is decreased, body resistance is built up, healing of the affected part is encouraged and cure of the patient is certainly more likely.

Nature makes a strong effort at repairing the affected lung in tuberculosis. Examination of the patient will reveal upon inspection, that there is a "lagging" on the affected side. The muscles overlying the pulmonary lesions are sometimes spasmodically contracted. Pleural adhesions are formed; these are

* Delivered 2/4/41 before Tuberculosis Section Meeting of the Philadelphia County Medical Society.

**Clinical Chief, Division of Tuberculosis, City of Philadelphia; Instructor in Medicine, Temple University, Philadelphia; Medical Chief, Northeastern Hospital, Philadelphia.

nature's means of inhibiting the motion of the diseased lung, or impeding the respiratory movements of the lung. Thus, when we apply rest in curing tuberculosis, whether it be general rest or local rest (as employed by the surgeons) we are once again imitating nature in trying to produce the best results. This immobilization of the lung will also serve to prevent metastatic auto infection. It has also been shown experimentally, that functional rest greatly contributes toward a cure of tuberculous lesions.

It is a matter of common experience that muscular exercise increases the rate and amplitude of the respiratory movements.

Considering the average respiratory rate as 17 per minute, the lungs should contract and expand over 24,500 times in twenty-four hours, and in the presence of disease with increased metabolic activity, this rate would show a definite increase.

Both physical and mental rest are important in curtailing body metabolism. Rest may be secured by the following methods:

- (1) Voluntary body and mental rest on the part of the patient.
- (2) Associated pathological processes—such as pleurisy with adhesions.
- (3) Surgical procedures such as pneumothorax, phrenicectomy, and thorocoplasties.

The patient who is ill with active tuberculosis, should be put on general rest. This

takes in a complete relaxation of the body musculature and mental processes. The patient should remain in bed twenty-four hours daily, not being permitted bathroom or dining room privileges. This should always be insisted upon at the onset of the treatment. These patients should be taught to relax completely, thereby bringing metabolism at the lowest possible ebb. Surgical rest should be given when indicated and where possible. Rest should be continued until evidences of toxemia, for example, tachycardia, temperature, anorexia and debility have subsided for at least six weeks, then followed by carefully prescribed exercises. It is far wiser to err in the continuance of rest, rather than exercise too early, for bed rest injures few, while over exercise, however slight, kills many patients.

There should be no set rule of when to begin exercises in any patient. Each patient should be studied and handled separately. The doctor should be governed by the continuance or the disappearance or the reappearance of the signs of tuberculo-toxemia, as to how much exercise the patient can take, what type he can do, when the exercises should begin and when the rest periods should end.

2925 North 24th Street

References

- 1 *Pulmonary Tuberculosis*, Fishberg, Vol. II.
- 2 *Human Physiology*, Howell.

The American College of Physicians Postgraduate Course

The Advisory Committee on Postgraduate Courses, with the approval of the Committee on Educational Policy and the Executive Committee of the American College of Physicians, announces a course on *The Diagnosis and Treatment of Heart Disease*, arranged through the generous co-operation of the directors and the institution at which the course will be given, Massachusetts General Hospital and the House of the Good Samaritan, Boston, Mass., February 2-14, 1942. Paul D. White, M.D., F.A.C.P., Director. (Minimal registration, 20; maximal registration, 30.) Fee, \$40.00.

The course will cover the fundamentals in the diagnosis and treatment of disorders of

the heart and circulation. Approximately half of the time will be devoted to demonstrations and small group instruction in pathology, electrocardiography, roentgenology, and the study of heart sounds and murmurs in the clinics and wards of the Massachusetts General Hospital and at the House of the Good Samaritan. The remainder of the time will be devoted to clinics and clinical-pathological discussions of special phases of heart disease and its treatment, conducted by members of the Massachusetts General Hospital staff and by members of other hospital staffs in Boston particularly qualified to discuss their subjects.

Organization News

SECOND SEMI-ANNUAL MEETING of the NEW YORK STATE CHAPTER of the AMERICAN COLLEGE OF CHEST PHYSICIANS

To Be Held at
THE BILTMORE HOTEL
NEW YORK CITY

Friday, January 23, 1942

MORNING SESSION

Chairman—Dr. Nelson W. Strohm, Buffalo, N. Y.

9:30 A. M. Registration of members and guests.

9:45 A. M. "Tracheo-Bronchial Tuberculosis."

Dr. Louis H. Clerf, Professor Broncho-Esophagology, Jefferson Medical College and Director department of Broncho-Esophagology, Jefferson Medical College Hospital, Philadelphia, Pa.

Discussion opened by:

Dr. John Devereux Kernan, Professor of Bronchology, College of Physicians and Surgeons (Columbia University) and Director department of Bronchology, Presbyterian Hospital, New York City.

11:00 A. M. "Total Pneumonectomy."

Dr. Julian Johnson, Director department of Thoracic Surgery, University Pennsylvania Hospital, Philadelphia, Pa.

Discussion opened by:

Dr. Samuel Olcott Thompson, Associate Professor Surgery, New York Medical College and Director department of Thoracic Surgery, Metropolitan Hospital, New York City.

1:00 P. M. Lunch.

Guest Speaker:

Dr. Samuel J. Kopetzky, New York City, Medical Director, Selective Service Administration for the State of New York. President of the Medical Society of the State of New York.

Subject: *Medical Preparedness.*

AFTERNOON SESSION

Chairman—Dr. James S. Edlin, New York City.

2:30 P. M. "The Role of the Radiologist in the Diagnosis of Diseases of the Chest."

Dr. Henry K. Taylor, Director department of Radiology, Welfare Hospital, New York City.

Discussion opened by:

Dr. Bart R. Young, Associate Professor Radiology, Temple University Medical School and Assistant Director department of Radiology, Temple University Hospital, Philadelphia, Pa.

4:00 P. M. Chest X-ray Conference.

4:30 P. M. Business Meeting.

* * *

Officers of the New York State Chapter:

President—Dr. Nelson W. Strohm, Buffalo, New York.

Vice-President—Dr. James S. Edwin, New York City.

Secretary-Treasurer—Dr. Arthur Q. Penta, Schenectady, N. Y.

Members and Their Friends Are Cordially Invited to Attend

Southwestern Chapter Organized

The Southwestern Chapter of the College was formally organized one day prior to the annual meeting of the Southwestern Medical and Surgical Association, at El Paso, Texas, on November 19th. A scientific program was presented which occupied the entire day and concluded with a dinner at the Cortez Hotel. Major M. S. White, a member of the faculty of the School of Aviation Medicine of the U. S. Army stationed at Randolph Field, San Antonio, Texas, addressed the guests at the dinner meeting on "Aviation Medicine." Dr. Frank S. Dolley, Los Angeles, was the guest speaker for the scientific program. He spoke on the progress made with "Extrapleural Pneumothorax." Other papers of interest were presented by the Fellows of the College residing in the southwestern states.

Dr. Orville E. Egbert, El Paso, Texas, former Governor of the College for Texas, was elected President of the Chapter. Dr. Robert O. Brown, Santa Fe, New Mexico, was elected Vice-President and Dr. R. B. Homan, Jr., El Paso, was elected Secretary-Treasurer. The Southwestern Chapter will meet annually with the Southwestern Medical and Surgical Association, and the meeting for 1942 has been scheduled to be held at Albuquerque, New Mexico.

California Chapter Organized

The California Chapter of the College was organized at a meeting held at Los Angeles, December 12th. The meeting was arranged by Dr. Edward W. Hayes, Monrovia, Regent of the College, who introduced by Dr. Benjamin Goldberg, Chicago, President of the College. Dr. Goldberg discussed the program and objects of the organization and pointed out the progress made during the past year.

Dr. Carl R. Howson, Los Angeles, was elected President of the California Chapter; Dr. Charles A. Dukes, Oakland, Vice-President; and Dr. David T. Proctor, Pasadena, Secretary-Treasurer.

Illinois Chapter Prepares for Annual Meeting

The program committee of the Illinois Chapter of the College under the chairmanship of Dr. Julius B. Novak, Chicago, has perfected plans for the annual meeting of the Illinois Chapter which will meet at Springfield, Illinois, May 1942, in connection with the Illinois State Medical Society. Dr. Robert K. Campbell, Governor of the College for Illinois, will be in charge of the General Arrangements Committee for the meeting. The other members of the Committee are: Dr. George Thomas Palmer, Dr. Darrell H. Trumpe, Secretary-Treasurer of the Illinois Chapter, and Dr. George H. Vernon, all of Springfield, Illinois.

Cuban Chapter Presents Program

The following scientific program was presented by the Cuban Chapter of the College at Havana on November 25, 1941:

"A Study of Nervous Accidents in the Course of Artificial Pneumothorax"—Antonio Navarrete, M.D.

"Contralateral Effect of Pneumothorax"—Juan M. Moscosco, M.D.

"Genito-Urinary Complications in Pulmonary Tuberculosis"—Marcelo Seguro, M.D.

NOTICE

The prompt payment of your annual dues in the College is important to the proper functioning of your society. The mailing of additional notices increases the cost of operation of your organization. Please pay your dues promptly. Thank you.

Paul H. Holinger, M.D.,
Secretary-Treasurer.

College Completes Military Preparedness Survey

The officers and Governors of the American College of Chest Physicians have just completed an exhaustive survey and evaluation of the physicians who have returned the questionnaires submitted by the Committee on Medical Preparedness of the American Medical Association. Some 2500 questionnaires were returned to the Committee on Medical Preparedness of the American Medical Association wherein the physicians claimed that they were qualified Tuberculosis Specialists. It was necessary to make a careful study of each physician's qualifications and the information supplied is now being tabulated upon punch cards for the use of the Surgeon General of the U. S. Army.

The efficient organization which the College has built up during these past years has enabled us to conduct this survey within the shortest space of time and with the least possible friction.

The officers of the College wish to express their appreciation to the Governors and Regents of the College and to the Fellows who gave so unsparingly of their time and energy in the compilation of this data.

Indiana Chapter Receives Charter

A State Charter was awarded to the recently organized Indiana Chapter of the College by the Board of Regents of the College. The Charter was delivered to Dr. Thomas R. Owens, Secretary-Treasurer of the Indiana Chapter. A copy of the Charter is to be framed and displayed at the Executive Offices of the College at Chicago.

Dr. Hayes Speaks at Richmond, Virginia

Dr. E. W. Hayes, Chairman of the Council on Undergraduate Teaching of the College, was a guest speaker at the annual meeting of the Association of American Medical Colleges held at Richmond, Virginia, October 27-29. Enroute to Richmond, Dr. Hayes was the guest of Dr. J. Winthrop Peabody, Washington, D. C., President-elect of the College. Dr. Hayes was accompanied on the trip by Mrs. Hayes and they attended a Special Homecoming at the University of Minnesota on their return trip to California.

NOTICE

Members of the College are urged to return their proofs for the directory listings promptly.

Pacific Northwest Chapter Meeting Postponed

Due to the war, the Second Annual Postgraduate Session on Diseases of the Chest to be given jointly by the University of Oregon Medical School and the Pacific Northwest Section of the American College of Chest Physicians scheduled to be held at the University at Portland, Oregon, December 11-13, was postponed. An announcement concerning the meeting will be given at a later date.

Executive Committee Meets at Chicago

The Executive Committee of the American College of Chest Physicians met at the Edgewater Beach Hotel, Chicago, November 16th.

The program for the 1942 annual meeting of the College was discussed. The Dennis Hotel, Atlantic City, was selected as the Convention Headquarters, and all of the scientific papers will be presented at the Dennis Hotel.

Dr. Joseph R. Morrow, President of the New Jersey Chapter of the College, was named Chairman of the General Arrangements Committee for the meeting and Dr. Jas. S. Edlin, New York City, Vice President of the New York State Chapter, was appointed Chairman of the Entertainment Committee.

Those present at the meeting were: Dr. Benjamin Goldberg, President; Dr. J. Winthrop Peabody, President-elect; Dr. Paul H. Holinger, Secretary-Treasurer; and Murray Kornfeld, Executive Secretary.

Membership in College Increases

During the year 1941, 173 new Fellows and Associates were admitted into the College. More than 100 applications are pending further investigation.

Reader Notice

Why Mead Johnson & Company cooperates with the Council:

Voluntarily, we market only Council-Accepted products because we have faith in the principles for which the Council on Pharmacy and Chemistry (and the Council on Foods) stand.

We have witnessed the three decades during which the Council has brought order out of chaos in the pharmaceutical field. For over thirty years it has stood—alone and unafraid—between the medical profession and unprincipled makers of proprietary preparations.

The Council verifies the composition and analysis of products, and substantiates the claims of manufacturers. By standardizing nomenclature and disapproving therapeutically suggestive trade names, it discourages shotgun therapy and self-medication. It is the only body representing the medical profession that checks inaccurate and unwarranted claims on circulars and advertising as well as on packages and labels.